

NAME:

DATE:

Unit-2 Mastery Assessment (version 621)

Question 1 (10 points)

Let f represent a function. If $f[35] = 9$, then there exists a knowable solution to the equation below.

$$y = 3 \cdot (f[5x - 50] + 6)$$

Find the solution.

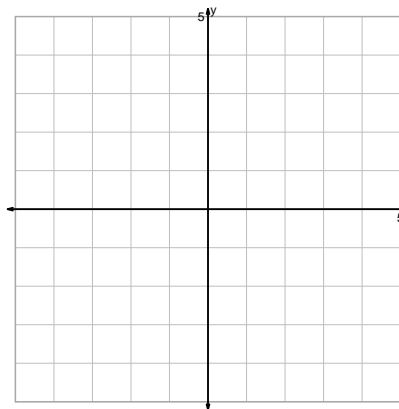
$$x =$$

$$y =$$

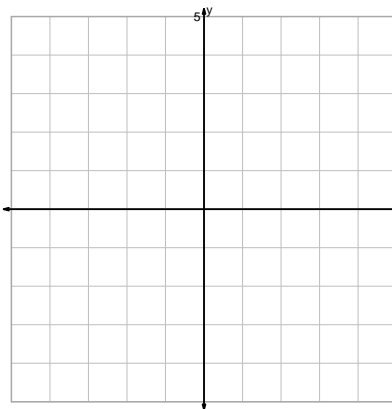
Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

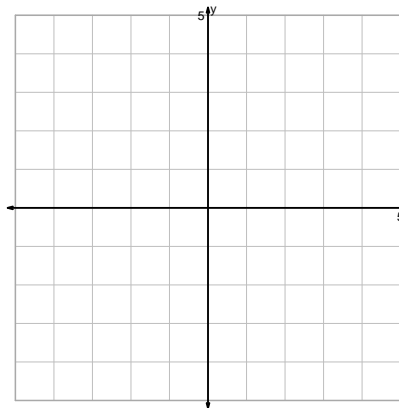
$$y = \left(\frac{x}{2}\right)^3$$



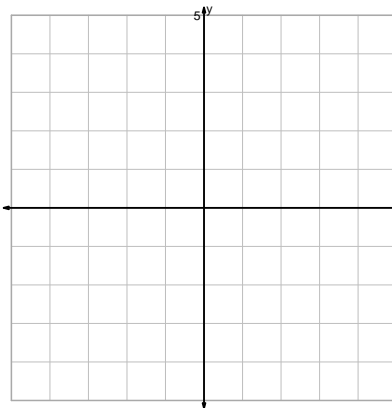
$$y = 2^{2x}$$



$$y = x^2 - 2$$

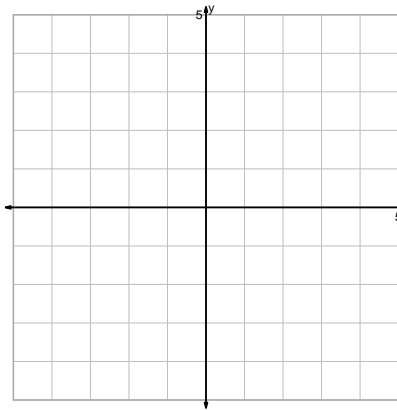


$$y = \sqrt{-x}$$

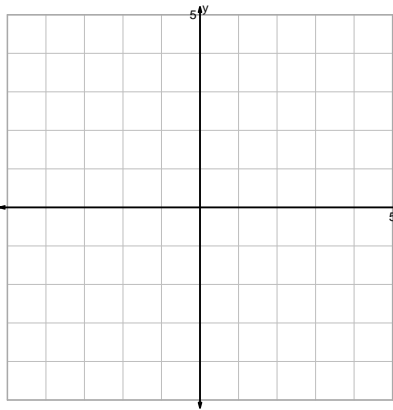


Question 2 continued...

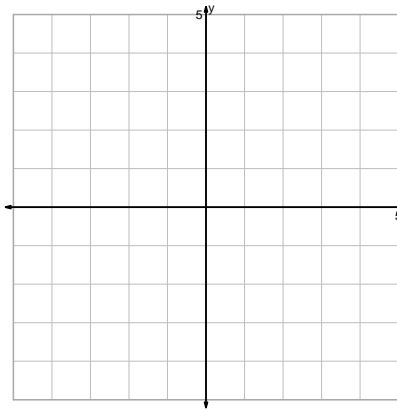
$$y = \frac{\sqrt[3]{x}}{2}$$



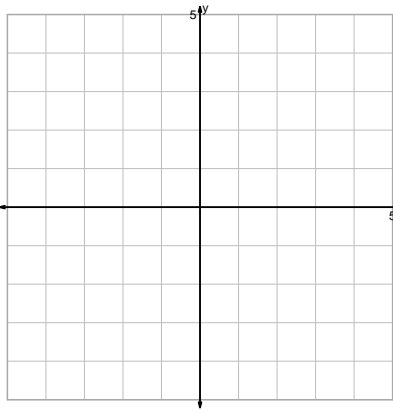
$$y = -2^x$$



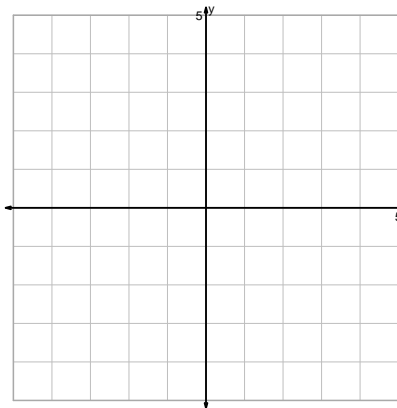
$$y = \sqrt{x} + 2$$



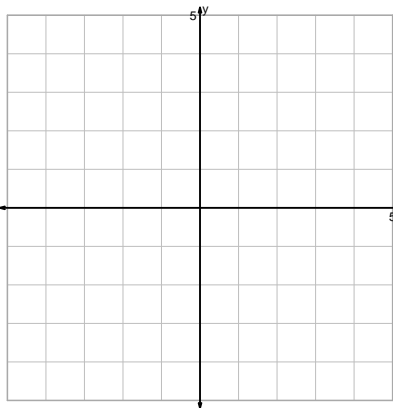
$$y = (x + 2)^3$$



$$y = (x - 2)^2$$

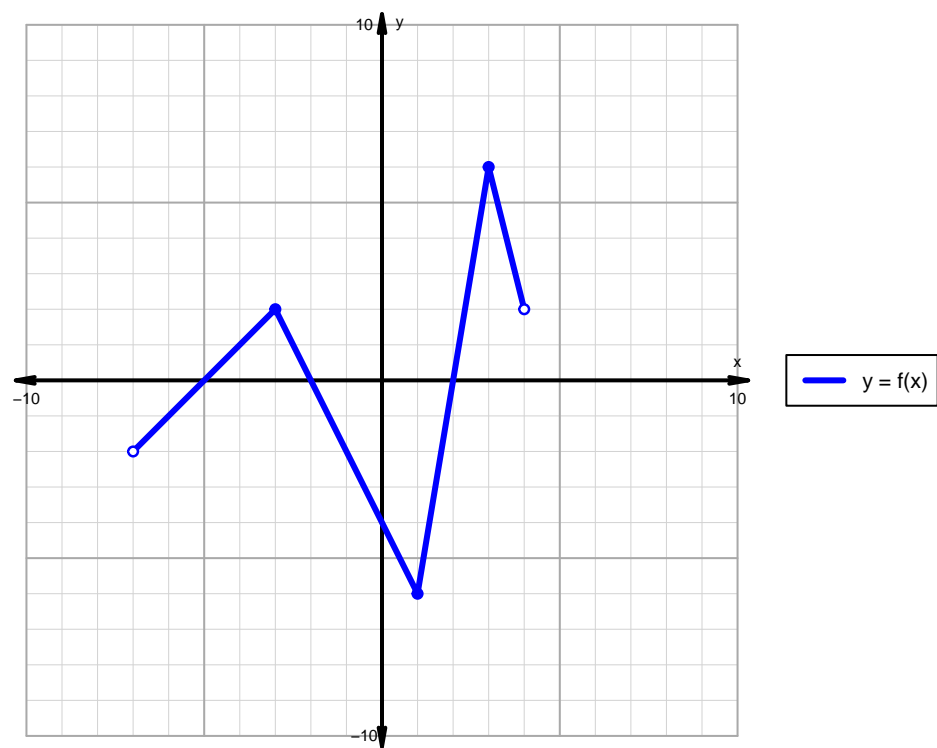


$$y = 2 \cdot \log_2(x)$$



Question 3 (20 points)

A function is graphed below.



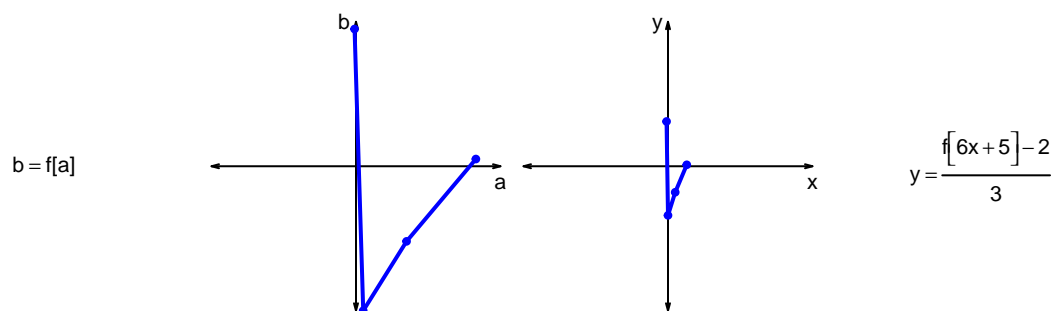
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f[6x+5]-2}{3}$ are represented below in a table and on graphs.

a	b	x	y
-1	95	-1	31
5	-100	0	-34
35	-52	5	-18
83	5	13	1



- a. Write formulas for calculating x from a and calculating y from b . (Or, write the coordinate transformation formula.)

- b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f[6x+5]-2}{3}$?

Question 5 (10 points)

A parent square-root function is transformed in the following ways:

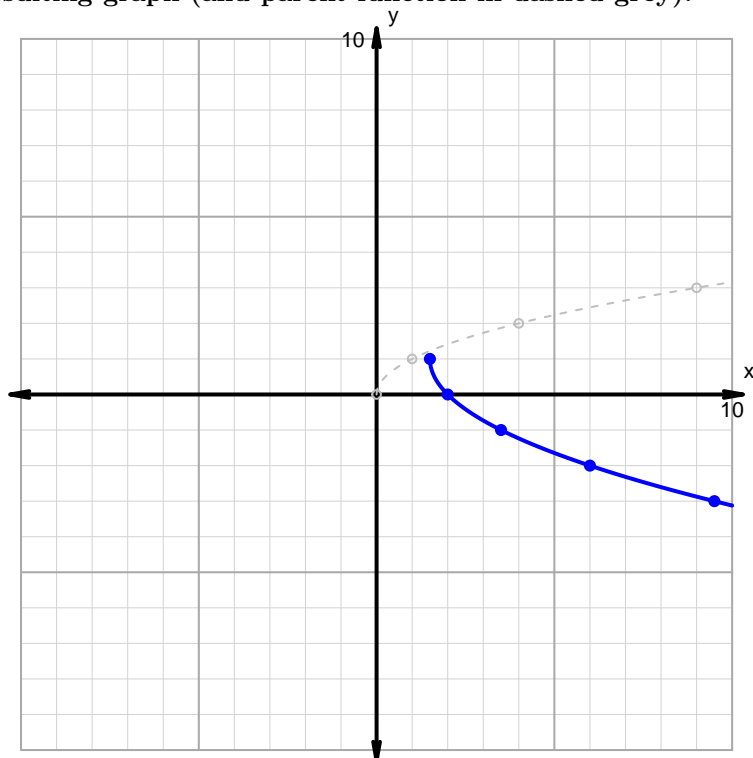
Horizontal transformations

1. Translate right by distance 3.
2. Horizontal shrink by factor 2.

Vertical transformations

1. Translate down by distance 1.
2. Vertical reflection over x axis.

Resulting graph (and parent function in dashed grey):



- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = \frac{1}{3} \cdot |x + 5| - 1$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	